Name: Date:

Polynomial Factoring solution (version 683)

1. **The quadratic formula says if $ax^2 + bx + c = 0$ then $x = \frac{-b \pm \sqrt{b^2-4ac}}{2a}$. Use the quadratic formula to solve the following equation.**

$$x^2 + 12x + 41 = 0$$

Simplify your answer(s) as much as possible.

Solution

$$x = \frac{-(12) \pm \sqrt{(12)^2 - 4(1)(41)}}{2(1)}$$

$$x = \frac{-(12) \pm \sqrt{144 - 164}}{2(1)}$$

$$x = \frac{-12 \pm \sqrt{-20}}{2}$$

$$x = \frac{-12 \pm \sqrt{-4 \cdot 5}}{2}$$

$$x = \frac{-12 \pm 2\sqrt{5}\, i}{2}$$

$$x = -6 \pm \sqrt{5}\, i$$

Notice that i in NOT under the square-root radical symbol!!

2. **Express the product of $9 - 5i$ and $-4 - 3i$ in standard form ($a + bi$).**

Solution

$$(9 - 5i) \cdot (-4 - 3i)$$

$$-36 - 27i + 20i + 15i^2$$

$$-36 - 27i + 20i - 15$$

$$-36 - 15 - 27i + 20i$$

$$-51 - 7i$$

Polynomial Factoring solution (version 683)

3. **Write function $f(x) = x^3 + 4x^2 - 11x - 30$ in factored form. I'll give you a hint: one factor is $(x + 5)$.**

Solution

	1	4	-11	-30
-5		-5	5	30
	1	-1	-6	0

$$f(x) = (x+5)(x^2 - x - 6)$$

$$f(x) = (x+5)(x-3)(x+2)$$

4. **Polynomial p is defined below in factored form.**

$$p(x) = (x+2) \cdot (x-2) \cdot (x-6)^2$$

Sketch a graph of polynomial $y = p(x)$.